CRUISE SUMMARY REPORT

FOR COLLATIMG CENTRE USE

Centre: **DOD** **Ref. No.:**

Is data exchange restricted ☐ Yes ☒ In part ☐ No

SHIP enter the full name and international radio call sign of the ship from which the data were collected, and indicate the type of ship, for example, research ship; ship of opportunity, naval survey vessel; etc.

Name: **Alkor** **Call Sign:** **DBND**

Type of ship: **Research Vessel**

CRUISE NO. / NAME **AL483**

enter the unique number, name or acronym assigned to the cruise (or cruise leg, if appropriate).

CRUISE PERIOD start **(set sail)** **06/08/2016** **day/ month/ year** to **25/08/2016** **day/ month/ year** end **(return to port)**

PORT OF DEPARTURE (enter name and country) **Rostock**

PORT OF RETURN (enter name and country) **Rostock**

RESPONSIBLE LABORATORY enter name and address of the laboratory responsible for coodinating the scientific planning of the cruise

Name: **Leibniz-Institut für Ostseeforschung Warnemündel (IOW)**

Address: **Seestrasse 15, 18119 Rostock**

Country: **Germany**

CHIEF SCIENTIST(S) enter name and laboratory of the person(s) in charge of the scientific work (chief of mission) during the cruise.

Oliver Schmale

OBJECTIVES AND BRIEF NARRATIVE OF CRUISE enter sufficient information about the purpose and nature of the cruise so as to provide the context in which the report data were collected.

Methane is a known greenhouse gas that severely enhances climate change on earth, yet not all methane sources into atmosphere have been identified. A process that might be of importance is the production of methane by microorganisms within the anoxic guts of certain zooplankton species. This production takes place in the upper oxygenated water column and thus could have a direct impact on the methane flux between ocean and atmosphere. We hypothesize that highly productive regions like marginal seas, which have never been studied in detail in this context before, are areas of enhanced zooplankton-mediated methane production, which most probably causes the subthermocline methane anomaly that have been sporadically identified in the oxygenated water column of the Baltic Sea. On the proposed cruise we will combine methane chemistry, microbiology, and zooplanktology in a multidisciplinary approach to investigate zooplankton and particle-related methanogenesis in detail using the Baltic Sea as a model system. We plan to investigate the following key questions: (1) Is the subthermocline methane anomaly a widespread phenomenon in the Baltic Sea? (2) Does zooplankton have the potential to support the methane anomaly in the shallow water and how are copepod species and environmental factors like food composition influencing methane production? (3) Which microbes are involved in upper-water methane production and can we detect differences in methanogenic assemblages and their activities between copepod guts, fecal pellets, and other water column seston particles?

PROJECT (IF APPLICABLE) if the cruise is designated as part of a larger scale cooperative project (or expedition), then enter the name of the project, and of organisation responsible for co-ordinating the project.

Project name: Zooplankton assoziierte Methanproduktion (ZOOM)

Coordinating body: IOW, Oliver Schmale

PRINCIPAL INVESTIGATORS: Enter the name and address of the Principal Investigators responsible for the data collected on the cruise and who may be contacted for further information about the data. (The letter assigned below against each Principal Investigator is used on pages 2 and 3, under the column heading 'PI', to identify the data sets for which he/she is responsible)

A. Oliver Schmale, IOW

B. Janine Wäge, IOW

C. Beate Stawiarski, IOW

D. Volker Thiel, Geoscience Center, Georg-August University of Göttingen

E. Jens Schneider von Deimling, Christian-Albrechts-Universität zu Kiel

F. Constanin Recknagel, IOW

MOORINGS, BOTTOM MOUNTED GEAR AND DRIFTING SYSTEMS

This section should be used for reporting moorings, bottom mounted gear and drifting systems (both surface and deep) deployed and/or recovered during the cruise. Separate entries should be made for each location (only deployment positions need be given for drifting systems). This section may also be used to report data collected at fixed locations which are returned to routinely in order to construct 'long time series'.

PI	APPROXIMATE POSITION						DATA TYPE	DESCRIPTION
	LATITUDE			LONGITUDE				
See top of page.	deg	min	N/S	deg	min	E/W	enter code(s) from list on cover page.	Identify, as appropriate, the nature of the instrumentation the parameters (to be) measured, the number of instruments and their depths, whether deployed and/or recovered, dates of deployments and/or recovery, and any identifiers given to the site.

Please continue on separate sheet if necessary

SUMMARY OF MEASUREMENTS AND SAMPLES TAKEN

Except for the data already described on page 2 under 'Moorings, Bottom Mounted Gear and Drifting Systems', this section should include a summary of all data collected on the cruise, whether they be measurements (e.g. temperature, salinity values) or samples (e.g. cores, net hauls).

Separate entries should be made for each distinct and coherent set of measurements or samples. Different modes of data collection (e.g. vertical profiles as opposed to underway measurements) should be clearly distinguished, as should measurements/sampling techniques that imply distinctly different accuracy's or spatial/temporal resolutions. Thus, for example, separate entries would be created for i) BT drops, ii) water bottle stations, iii) CTD casts, iv) towed CTD, v) towed undulating CTD profiler, vi) surface water intake measurements, etc.

Each data set entry should start on a new line – it's description may extend over several lines if necessary.

NO, UNITS : for each data set, enter the estimated amount of data collected expressed in terms of the number of 'stations'; miles' of track; 'days' of recording; 'cores' taken; net 'hauls'; balloon 'ascents'; or whatever unit is most appropriate to the data. The amount should be entered under 'NO' and the counting unit should be identified in plain text under 'UNITS'.

PI see page 2	NO see above	UNITS see above	DATA TYPE Enter code(s) from list on cover page	DESCRIPTION Identify, as appropriate, the nature of the data and of the instrumentation/sampling gear and list the parameters measured. Include any supplementary information that may be appropriate, e. g. vertical or horizontal profiles, depth horizons, continuous recording or discrete samples, etc. For samples taken for later analysis on shore, an indication should be given of the type of analysis planned, i.e. the purpose for which the samples were taken.
A	**62**	**°C, mgm-3**	**H10**	**CTD, continuous temperature, salinity & Chl-a fluorescence vertical profiles**
C	**113**	**mg/L**	**B71**	**particulate organic carbon**
C	**117**	**mgm-3**	**B02**	**chlorophyll a samples**
A	**1**	**°C,kgm-3**	**H71**	**continous Thermosalinograph records: temperature, salinity, fluorescence at surface**
B	**206**	**µmol/L**	**H24**	**discrete nitrate samples**
B	**206**	**µmol/L**	**H22**	**discrete phosphate samples**
C	**17**	**abundance**	**B08**	**Phytoplankton**
C	**26**	**abundance**	**B09**	**Zooplankton**
D	**25**	**ng/L**	**B72**	**Biochemical measurements (biomarker lipids), sediment core**
D	**7**		**G04**	**Core - soft bottom**
A	**178**	**nmol/l**	**H33**	**dissolved methane**
A	**178**	**o/oo**	**H32**	**methane stable isotopes**
E	**1**		**B28**	**Acoustic reflection an marine organisms (zooplankton distribution pattern)**
D	**15**	**ng/L**	**B72**	**Biochemical measurements (biomarker lipids), water column**
B	**206**	**µmol/L**	**H26**	**discrete silikate samples**
B	**206**	**µmol/L**	**H76**	**discrete ammonia samples**
B	**206**	**µmol/L**	**H25**	**discrete nitrite samples**
F	**180**	**nmol/L**	**H33**	**dissolved methane concentrations from incubation**
F	**54**	**o/oo**	**H32**	**methane stable isotopes from incubations**
C	**89**	**dpm**	**H31**	**14C methane production rates from plankton incubations**
				Please continue on separate sheet if necessary

TRACK CHART: You are strongly encouraged to submit, with the completed report, an annotated track chart illustrating the route followed and the points where measurements were taken.	**Insert a tick(✓) in this box if a track chart is supplied**	☒

GENERAL OCEAN AREA(S): Enter the names of the oceans and/or seas in which data were collected during the cruise – please use commonly recognised names (see, for example, International Hydrographic Bureau Special Publication No. 23, 'Limits of Oceans and Seas').

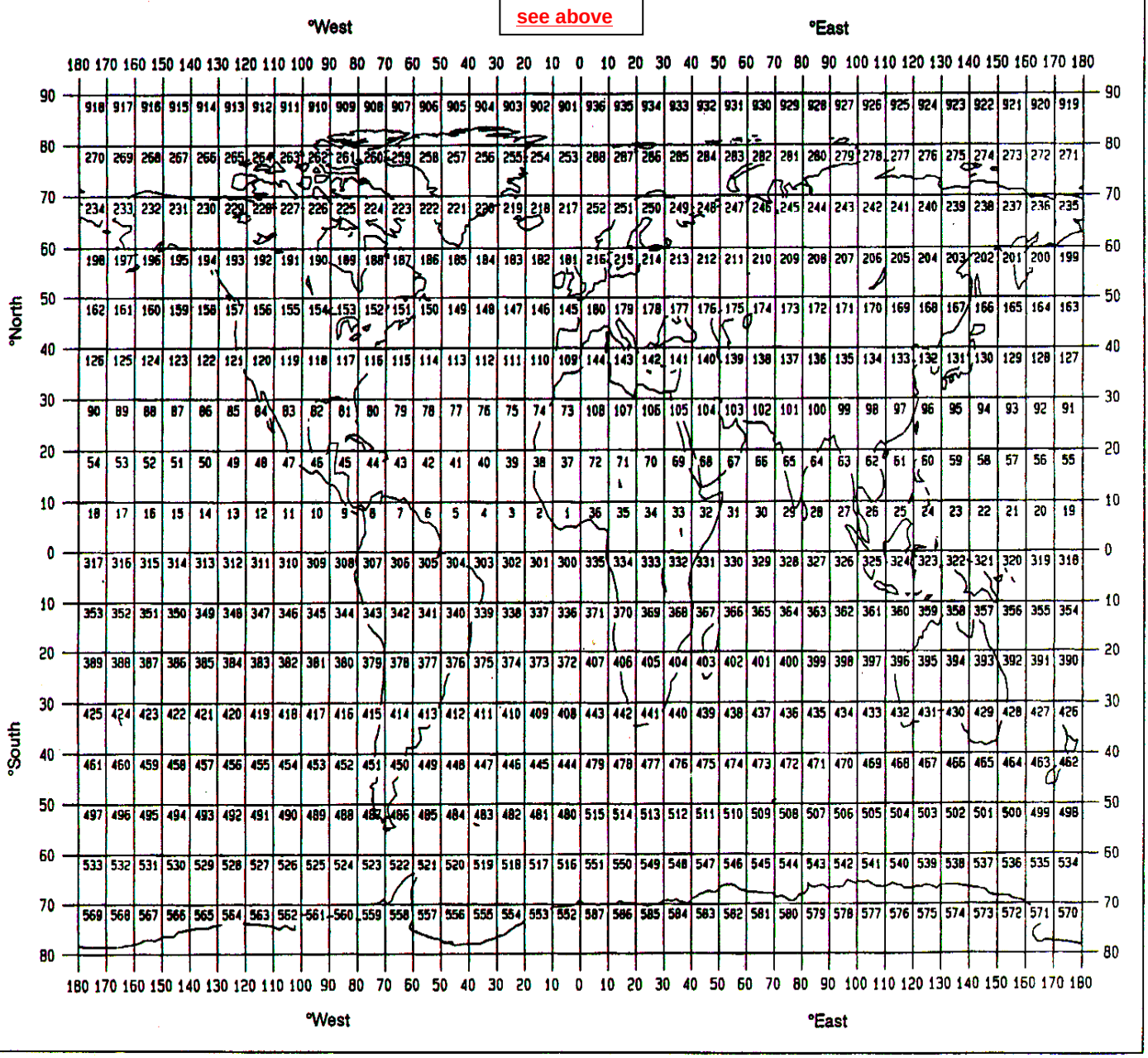
Central Baltic Sea

SPECIFIC AREAS: If the cruise activities were concentrated in a specific area(s) of an ocean or sea, then enter a description of the area(s). Such descriptions may include references to local geographic areas, to sea floor features, or to geographic coordinates.
Please insert here the number of each square in which data were collected from the below given chart

215, 214

GEOGRAPHIC COVERAGE - INSERT 'X' IN EACH SQUARE IN WHICH DATA WERE COLLECTED

see above



THANK YOU FOR YOUR COOPERATION

Please send your completed report without delay to the collating centre indicated on the cover page

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59°N
58°N
57°N
56°N
55°N
54°N
Asko
Göteborg
Visby
Slite
Ventspils
Oskarshamn
Kalmar
Liepaja
Klaipeda
Malmoe
Simrisham
Ystad
Trelleborg
Roenne
Rødb
Gedser
Puttgarden
Gassnitz
Stralsund
Peenemünde
Wolgast
Ustka
Gdynia
Gdansk
Kaliningrad
Kolobrzeg